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# Integrated coastal management and marine protected areas: Complementarity in the Philippines

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## Abstract

Small marine protected areas (MPAs) were established in the Philippines as early as 1974. These models set forth a framework for coral reef management that has been shown to enhance fish yields to traditional fishers as well as protect and maintain near-shore coral reef habitats for biodiversity and multiple economic uses. The history of MPAs is described in relation to the evolution of integrated coastal management (ICM) in the Philippines. Devolution of authority for management of natural resources to local governments in 1991 was a major national policy shift that has supported more localized management efforts. This policy shift has encouraged more MPAs but not a higher rate of success. As the numbers of MPAs increased, the need for a support base beyond the MPA has become apparent. A convergence of MPAs within ICM programs was seen by 2000. Numerous experiments in coastal management have thus been conducted that range from broad area management planning for whole bays to small community-based MPA projects. Important lessons with implications for broader-based support systems required by MPAs within ICM, include: The importance of a well-articulated process that includes community participation and ownership in collaboration with single or multi-municipal governments; the role of multiple stakeholders,

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government and donor agencies in planning and management; the creative use of financial mechanisms to create long-term self-supporting MPAs; the need for localized periodic monitoring and evaluation to provide feedback to managers, and the need for nesting of MPAs within ICM through broad area planning and implementation.

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## 1. Context and issues of coastal management in the Philippines

Coastal management has been practiced in the Philippines over the last three decades to try to stem the increasing tide of destruction to coastal habitats and the decline of fisheries. Numerous experiments in coastal management have been conducted that range from broad area management planning for whole bays to small community-based marine protected area (MPA) projects [1]. The increasing number of coastal management projects and MPAs is attributed to the interest of local and national government through devolution of authority under national policies to promote protection and management of coastal resources. This is often accomplished through MPAs as a means for coastal habitat and fisheries management [2]. Municipal, city, and provincial governments have thus become the key players in the implementation of integrated coastal management (ICM) and MPA projects in association with national government, NGOs, people's organizations, research institutions, and multi-lateral and bilateral donor organizations, employing different strategies and approaches. Many lessons learned in coastal management involving MPAs now exist. Those summarized here are from case studies that define the basic ingredients for successful MPA management in the context of broader ICM programs in the Philippines.

The management issues of most concern are declining fisheries, mangrove forest and coral reef destruction, and poverty among coastal communities. Overall fisheries-related food production in the Philippines has been static for the last 10 years despite increased number and tonnage of commercial vessels, increased number of municipal fishers and increased coverage of fishponds [3–5]. Municipal fish catch has been on a steady decline, accelerated by the use of illegal fishing practices such as dynamite and cyanide (Fig. 1). It is currently estimated that the 27,000 km<sup>2</sup> of coral reefs (with only about 5% in excellent condition) contribute at least US\$ 1.35 billion annually to the economy [6,7]. This conservative estimate would be significantly more with improved management through effective coastal management efforts [2].

The numerous factors contributing to this decline are intertwined and not easily isolated for management purposes. Nevertheless, the primary issues and conflicts of interest affecting coral reefs and mangrove forests, often used as symbols for the broader coastal management issues in the country, are: various kinds of pollution stemming from upland and coastal development, illegal and destructive fishing practices, over-fishing due to an open-access fishery regime throughout the country, a lack of planning and control of development in the shoreline and beach areas, increasing poverty among coastal dwellers, a rapidly growing population, and

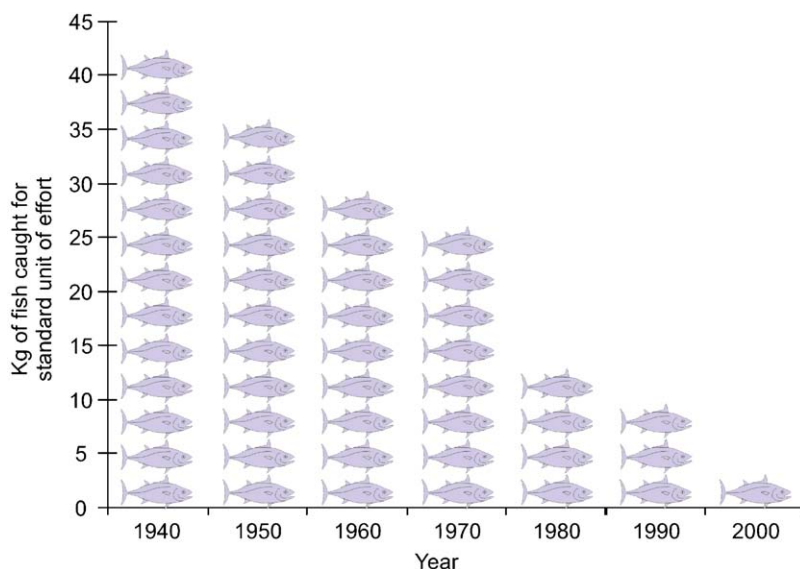


Fig. 1. Decline in catch per unit effort since 1940s for fishers using hook and line from six provinces in the Philippines [8].

variable political will to squarely address the problems [9,10]. A variable that drives many of the issues is a lack of economic alternatives that would make coastal dwellers less dependent on their natural resource base.

In short, the Philippines's 18,000-km coastline is impacted by a variety of activities that are eroding the natural resource base and the area's potential for future sustainable use. The lack of control of most coastal development is symptomatic and indicative of what is to come if stronger and more effective institutions and procedures for ICM are not put into place. The challenges of coastal management are of such magnitude that Philippine institutions are responding with more concern and integrated approaches than in the past. The history upon which this context has evolved is briefly described below.

## 2. Evolution of integrated coastal management in the Philippines

The history and progression of ICM has been influenced through programmatic experiences and various projects that have tested and refined the practice of coastal management in the Philippines [9,11]. The evolution of coastal management programs in the Philippines has approximated a pattern of five stages suggested by Sorensen et al. [12]:

1. *Incipient awareness*: The need for an ICM program becomes known as signs of coastal resource degradation worsens (1970s and 1980s).

2. *Growing awareness*: The need for an ICM program is heightened through national conferences, workshops, or hearings convened by government, academe or environmental groups (1980s and early 1990s).
3. *National study*: Heightened awareness resulting from conferences, international assistance missions, national studies and policy recommendations (1990s to present).
4. *New program creation*: Studies on the coastal situation and its management lead to pioneering new ICM programs and institutional arrangements (late 1990s to present).
5. *Program development, implementation and evaluation*: Policies, laws and programs are implemented and evaluated (starting to occur in 2002 and 2003).

A timeline of important events affecting the development of coastal management shows the stages and changes in Table 1. It also shows how there has been a legal and jurisdictional transition from central to local government responsibility for coastal resource management (CRM) reflected in the local government roles of the 1990s (Fig. 2).

In recent years, two major forces have influenced the development of coastal management in the Philippines [11]. The first is a series of donor-assisted projects that have resulted in a number of experiments in CRM (Table 1). Such projects, working with coastal communities, have focused on near-shore fisheries and coastal habitat management [14–16]. The second major influence affecting the evolution of coastal management is the devolution of authority from central to local governments (municipal, city, and provincial). In addition, CRM has been supported and nurtured by a variety of institutions, including government, non-government organizations (NGOs), people's organizations, research institutions and by multi-lateral and bilateral donors, employing different strategies and approaches.

The challenge created by the decentralization of coastal management responsibility is that few coastal municipal governments in the country have the capacity to manage their natural resources. They generally lack trained personnel, budget, planning-capacity and technical knowledge. In spite of these limitations, the motivation among municipal governments to manage their resources is increasing rapidly as they realize the seriousness of the problem and what they stand to lose if no action is taken [6]. Thus, the opportunity to improve ICM in the country is tremendous given the 832 coastal municipalities bordering 18,000 km of coastline.

Because the present state of coastal management in the Philippines depends largely on decentralized authority and various ICM projects, it is useful to briefly highlight the major ICM initiatives implemented over the past 30 years. These projects have provided key lessons for improving the state of ICM in the country and provide a sound foundation for the design of future ICM efforts. These ICM projects that are broad in focus but have also included some emphasis on MPAs while addressing a wide range of issues using a variety of approaches are:

1. *The Central Visayas Regional Project (CVRP)*, supported by a World Bank loan, was a pilot project in community-based rural development operating from 1984 to

Table 1  
Important events, laws and projects in the evolution of ICM

1932	Fisheries Act gives most management responsibility to central government
1930–1960s	Resources considered unlimited in supply not requiring management
1960–1970s	Robust expansion and development in fisheries and aquaculture
1974	First municipal marine reserve established around Sumilon Island, Cebu
1975	Fisheries decree promoted the optimal exploitation and use of fisheries
1975	Forestry code established the need to protect mangrove forests
1976	Environmental impact system established
1976	National mangrove committee established
1976	Commercial fishing limited to areas beyond 7 km of the shoreline
1978	Coral gathering is limited to scientific research
1978	Marine parks task force created to recommend sites for marine parks
1978	The Philippine extended economic zone established
1979	Coastal zone management committee with 22 agencies formed
1981	Philippines becomes signatory to CITES
1984–1992	Central visayas regional project begins community-based ICM
1985–1986	Marine conservation and development program of Silliman University establishes Apo, Pamilacan and Balicasag Islands as marine reserves
1986	<i>Muro-ami</i> and <i>Kayakas</i> fishing methods banned in Philippine waters
1986–1992	First bay-wide management program began in Lingayen Gulf
1987	Bureau of fisheries and aquatic resources moves from the ministry of natural resources to the department of agriculture
1988	First national marine park established at Tubbataha Reefs, Sulu Sea
1990–1997	Fishery sector program of DA-BFAR initiates bay-wide management
1991	Local government code devolves responsibilities to local governments
1992	Philippine council for sustainable development created
1992	Philippines becomes a signatory to Agenda 21
1992	National Integrated protected areas system (NIPAS) act passed
1993	Coastal environment program of DENR established
1995	Fisheries and aquatic resources management councils authorized
1996–2004	Coastal resource management project of DENR implements ICM
1998	Fisheries code reinforces the roles of local government in management
1998	First national coastal Mayors conference held to discuss ICM issues
1998–2004	Fisheries resource management project builds on lessons of FSP for bay-wide coastal management
1999	May proclaimed the month of the ocean in Philippines
2000	DA and DENR sign Memorandum on implementation of fisheries code
2001	More than 100 municipalities and cities allocate budget for ICM
2001	Southern mindanao integrated coastal zone project starts
2002	National coastal management policy being reviewed at national level
2003	National coastal management policy endorsed through executive order
2003	Philippine sustainable archipelagic development framework developed

*Sources:* Arquiza and White (1999); Chua and Scura (1992); Courtney and White (2000); DENR, DA-BFAR and DILG (2002); Pomeroy and Carlos (1997); White and Lopez (1991); and White, Salamanca and Courtney (2001).

1992. One of its components was watershed management, including near-shore fisheries development in four provinces. Interventions included mangrove reforestation, coral reef protection and marine sanctuary establishment, artificial

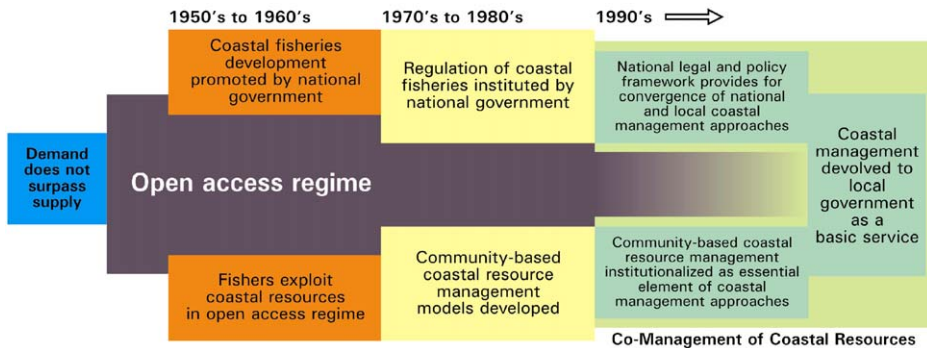


Fig. 2. Transition of authority from central to local government in Philippines [13].

reef and fish aggregating device installation, and mariculture. A major finding from a 1995 assessment of CVRP was that baseline information was insufficient to evaluate the results [17,18]. Although many initial site surveys were conducted, the information was not systematically stored and used to support management decisions, nor to later evaluate results. Thus, many of the potential lessons from such a comprehensive program were lost because they could not be measured.

2. *The Marine Conservation and Development Program (MCDP)* of Silliman University, supported by the United States Agency for International Development (USAID), operated from 1984 through 1986 on three small islands in the Central Visayas (Apo, Pamilacan and Balicasag Islands). This relatively small project generated important examples for community-based coral reef management that exemplified the potential sustainable use of coral reef fisheries and habitat [19]. The lessons from these three islands have increased over time as they continue to prosper and attest to the role of communities and participatory community methods in sustaining management efforts in spite of changes in government personnel and policies.
3. *The Lingayen Gulf Coastal Area Management Program (LGCAMP)* operated from 1986 through 1992 as one of the six CRM planning areas in Southeast Asia supported by USAID and the ASEAN countries. This was the first attempt at ICM in the Philippines for one large gulf in northern Luzon comprised of two provinces and 20 municipalities. The project first generated a comprehensive database for planning which included reliable fisheries data analysis to measure fishing effort reduction needs since the most serious issue of the area was over-fishing [20]. The difficulty of implementing the recommendations on fishing effort forced the planning process to diverge toward education, generation of political will and development of CRM plans at the municipal level. This program initiated an institutional arrangement to coordinate planning and implementation that is a model for the country although still not completely effective [21].
4. *The Fisheries Sector Program (FSP)* (1991–1997) implemented by the Department of Agriculture (DA) with support from an Asian Development Bank loan.

This very large program attempted to generate and implement CRM plans in 12 bays known for their rich fisheries, management problems and growing poverty of coastal residents. This government program tested the ability of the DA to incorporate community-based management as a mainstream approach to CRM. A primary strategy was to generate bay-wide CRM plans through the involvement of fishing communities by contracting non-government organizations to facilitate the planning and community organization process. The results have raised awareness about the need for management and in a few cases actually improved fishery management in the bays. But, as with the CVRP, the FSP did not do well on establishing and using a simple set of baseline information upon which evaluation and management decisions could be based. A new version of FSP, the Fisheries Resource Management Project (FRMP), started in 1999 for 5 years and a target of 18 bays.

5. *The Coastal Environment Program (CEP)* of DENR (1993–2001), implemented by the regional offices of DENR, had an emphasis on community participation and a focus on national MPAs. Although the CEP was constrained by a lack of budget and trained personnel, it was the only national government program to promote management of the entire coastal environment, including water quality and shoreline land use, and was not solely focused on fisheries management issues. The CEP has now become the “Coastal and Marine Management Office” (CMMO) of DENR and is developing into a national coordinating and policy unit supporting ICM throughout the Philippines. It coordinates with agencies within and outside of DENR and provides technical assistance to local governments through its regional offices.
6. *The National Integrated Protected Area Project (NIPAP)*, a project of the DENR funded by the European Union initiated in 1995 with the objective to help manage natural habitats and biodiversity in eight selected protected areas, two of which are marine (El Nido Marine Reserve and Malampaya Sound, Palawan). NIPAP has assisted to design and establish protected areas with rationalized, delineated, and demarcated boundaries; establish effective administrative structures for protected areas; and increase public awareness on the need to protect ecosystems and biodiversity and increased involvement of resident communities in natural resources management [22].
7. *The Coastal Resource Management Project (CRMP)* an 8-year (1996–2004) technical assistance project of the DENR, funded by the USAID. CRMP espoused multi-disciplinary, multi-sector (crossing political and institutional as well as environmental boundaries), multi-stage, and participatory processes of planning, implementing and monitoring for coastal management as learned from past efforts in CRM [16]. CRMP promoted these approaches by collaborating with municipal and national government and other donor-assisted projects focused on the coastal environment and its governance. The CRMP has developed a planning, monitoring and evaluation system for ICM for local government units that can be self-sustaining once it is operating within a given government unit. The CRMP initiated improved coastal management in 113 municipalities covering about 3500 km of coastline that constitute the “learning



and expansion areas” of the project, all of which have developed ICM plans and interventions. It has also championed the provision of technical assistance for information management and other guidance from nation and provincial government to municipal and city governments for ICM.

8. *The Fisheries Resource Management Project* (FRMP) supported by an ADB loan (1998–2004). It is being implemented through the DA-BFAR. This program is a continuation of the FSP that addressed the need for CRM in 12 bays. The focus of field implementation is to empower communities and local governments to manage their fisheries and other coastal resources. One notable change is that coastal resource assessments are being done together with community participation to start the planning and implementation process. The FRMP supports CRM as a basic service of local governments that includes MPAs as a “best practice” for CRM in all of its project areas.

A key lesson generated by the above ICM projects is that it is extremely difficult to plan and implement successful ICM without a multi-sector approach. Such programs must have sufficient support from the national and local government and its partners and a strong level of acceptance among the resource-dependent communities. Successful ICM programs in the Philippines are still localized where the geographic scope is small and the number of stakeholders limited. Nevertheless, this is changing as more multi-municipal or city and bay-wide ICM plans are being developed and implemented.

### 3. Marine protected area initiatives

The first MPA in the Philippines established as a fish sanctuary was in 1974 on Sumilon Island, Cebu under the guidance of the Silliman University Marine Laboratory. Sumilon Island fish sanctuary is often cited in the Philippines and internationally as the reason why coral reef fish sanctuaries contribute to improved reef fisheries management [23]. This initial experiment in reef management, that stopped all fishing on a portion of the Sumilon Island reef for about 10 years, allowed researchers to collect substantial data on the effects of such management on the coral reef and its related fisheries [24]. The benefits included an improved coral reef substrate condition due to cessation of all destructive fishing practices, a tripling of the individual fish abundance per 500 m<sup>2</sup> with the most significant increase among those fish targeted by fishermen, and substantial increases in yearly fish catch to fishers fishing on the Sumilon Island reef (not in the sanctuary) from about 14 to almost 36 tons/km<sup>2</sup> [25]. These unprecedented results convinced scientists, reef managers and fishers alike that fish sanctuaries did indeed improve reef fisheries, and most importantly benefited the fishers dependent on the area.

Between 1974 and the present, many similar municipal marine fish sanctuaries or MPAs have been established in the Philippines following the lead of Sumilon Island [26,27]. Several MPAs that are well managed and documented in terms of their benefits both for fisheries and tourism include Apo Island, Negros; Balicasag and



Pamilacan Islands, Bohol; Mabini, Batangas; and San Salvador Island, Zambales (Fig. 3) [23,28–33]. These examples have followed a general model as shown in Fig. 4 whereby the portion of a fringing coral reef adjacent to an island or mainland is set aside in a “no-take” or “sanctuary” zone and where the area outside this no-take zone is called a traditional fishing zone or in international terms, the buffer zone. Activities that do not damage the coral reef in any way such as traditional fishing

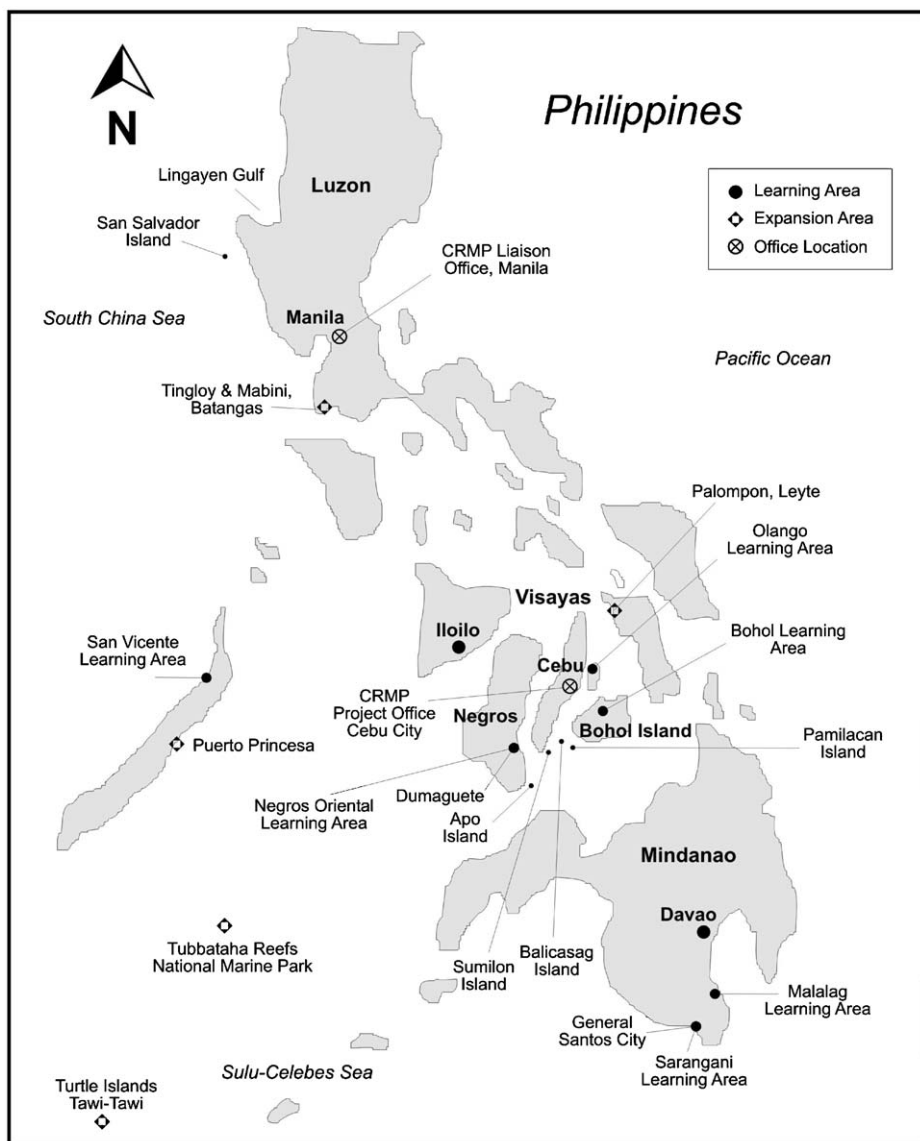


Fig. 3. Locations of MPAs and ICM projects noted in paper.

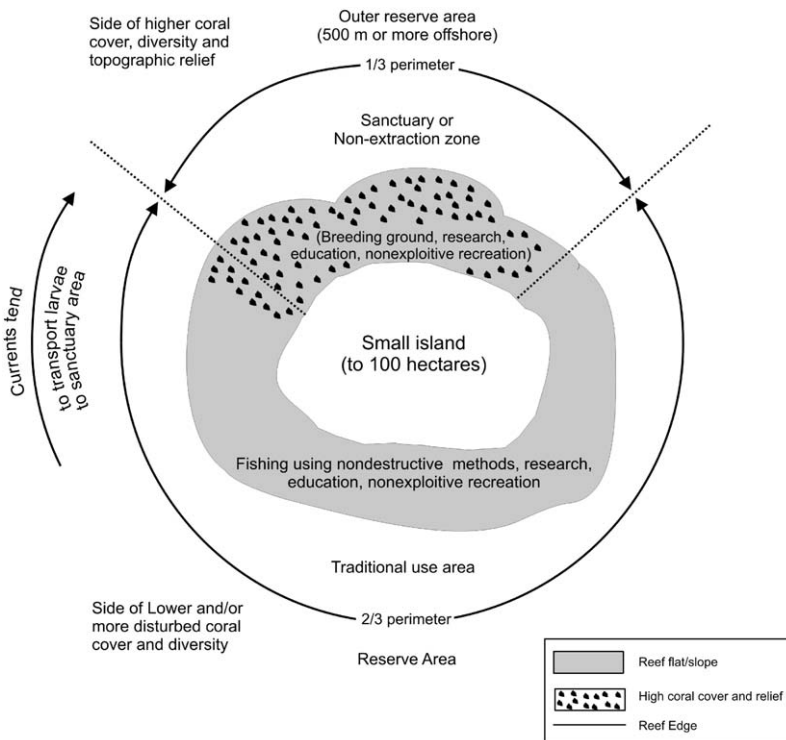


Fig. 4. Sample marine reserve system with zones as applied in Philippines.

methods are usually allowed within the buffer zone. Within the no-take or sanctuary zone, entry in the form of swimming and diving is normally permitted but without collection of any kind [30–32,34].

Recent studies have not only indicated the beneficial impacts of fish sanctuaries on fishery yields and protecting the coral reef but that people participating in such management efforts gain in a variety of ways related to food security, cash income from tourism, and pride in their protection role [29,35]. One salient characteristic of successful MPA projects is the strong involvement of communities and the local government in the planning and enforcement process. Such involvement is evident in all the MPA projects noted above and those currently evolving in the country [34,36]. This involvement builds the confidence of people to manage their own resources and encourages outcomes that are long lasting. Thus, success of MPAs in the Philippines hinges on two crucial actors: the (local and national) government and strong stakeholder community involvement.

But in the context of these apparent successful models, there are cracks in the system. In a survey of approximately 439 MPAs, all kinds were reported [26]. Although information on actual field management was limited, the study indicated that only 44 MPAs were fully enforced. In a 2003 survey of 54 established and

functioning MPAs, about 40% were managed in a sustainable manner [37]. Although the total area covered by all these MPAs is not known, the 54 MPAs reported cover about 81,000 ha (810 km<sup>2</sup>) of mostly coral reef habitat. Thus, the cumulative impacts of the existing MPAs, assuming full implementation, would contribute significantly to the sustainability of the country's coastal ecosystems.

In spite of all the activity to install and support MPAs, there are still relatively few that are sustainable in their own right. And contrary to the popular opinion that they are an easy and successful ICM intervention, they are actually floundering in many areas and in need of more assistance. Plus, the benefits from the successful and well-managed MPAs are limited and are often being lost to the drain of over-fishing, pollution and other anthropogenic pressures in surrounding areas, outside of the more closely controlled MPA or sanctuary [38].

The many MPA projects have increasingly revealed the need for more integrated forms of coastal management. Although the MPAs are seen as important interventions to protect coral reefs and to enhance near-shore fisheries, they only address a small portion of the coastal management issues in the country and sometimes inadvertently detract from the support required for broader area resources management for fisheries, pollution, shoreline development, mangrove conservation, and others.

#### 4. The legal and policy framework for ICM and MPAs

The legal and policy framework for ICM as well as for the establishment and management of MPAs in the Philippines is found in the Local Government Code (LGC) of 1991, the Fisheries Code of 1998 and pertaining only to MPAs, the National Integrated Protected Areas System (NIPAS) Act of 1992.<sup>1</sup> The LGC and the Fisheries Code provide for the policy and institutional framework for carrying out ICM at the local level in the Philippines. This shift to decentralized control over the management of resources encouraged the active participation of the local governments and communities in the decision-making process.

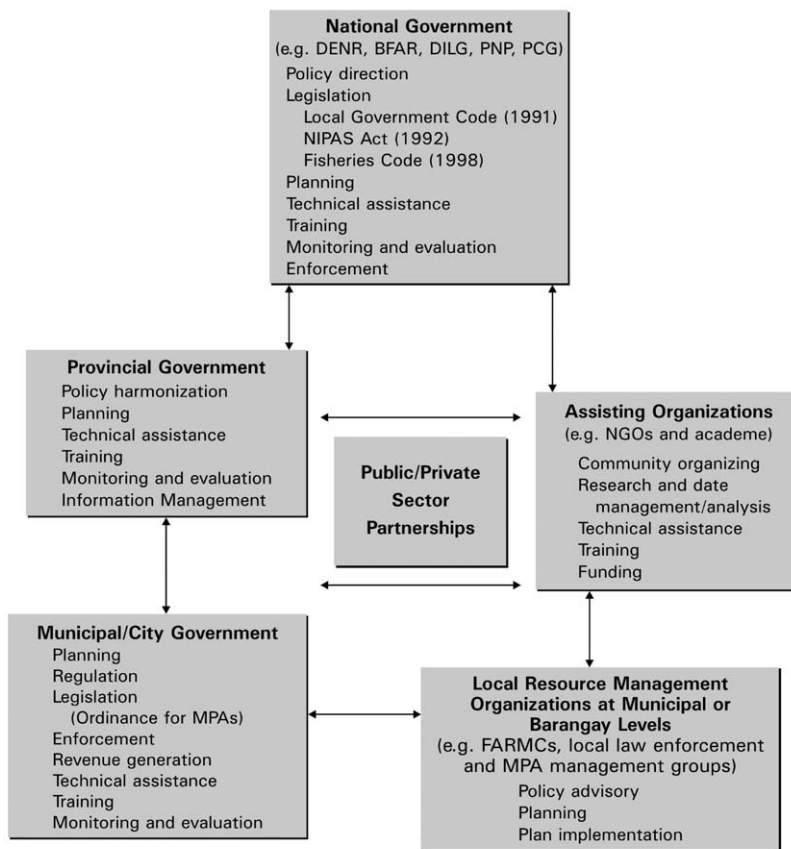
In the formulation, planning and implementation of ICM plans, the municipal or city governments are the primary agencies involved. There are many municipal ordinances supporting CRM implementation and MPA establishment within a *barangay* or multiple *barangay* area. In the case of MPAs in the Philippines, most are established by municipal or city government ordinance. All other government

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<sup>1</sup>The Local Government Code decentralizes authority for most natural resource management to the municipal governments. Although exceptions exist, the management of coastal resources including land-based, coastal and marine to 15 km offshore fall under the responsibility of municipal governments. Legal support for this responsibility was reinforced by the Fisheries Code that specifically makes municipal governments responsible for managing fisheries to 15 km offshore with the option of allowing commercial fishing in the area between 10 and 15 km. In addition, they are responsible for the use of near-shore waters and resources including allocation of space and the management and protection of all coastal habitats within their jurisdiction. The only exception for habitat protection is that of mangrove forests which are directly under the DENR and the control of fishpond lease agreements under the BFAR.

agencies at the national, regional and provincial level are tasked to provide technical, financial and resource assistance to these local governments in the implementation of their ICM plans and enforcement of regulations in their municipal waters as indicated in Fig. 5. The laws and institutions that support implementation of ICM as well as the establishment of MPAs are described in more detail in other publications [13,27,36].

The Fisheries Code likewise provides for inter-LGU cooperation for the management of contiguous fisheries and aquatic resources that straddle several municipalities, cities or provinces. This management strategy is enhanced with the



- BFAR** - Bureau of Fisheries and Aquatic Resources
- DENR** - Department of Environment and Natural Resources
- DILG** - Department of Interior and Local Government
- FARMC** - Fisheries and Aquatic Resources Management Council
- NIPAS** - National Integrated Protected Area System
- NGO** - Non-government Organization
- PCG** - Philippine Coast Guard
- PNP** - Philippine National Police

Fig. 5. Key institutional roles and responsibilities for local level ICM including MPAs.

creation of Integrated Fisheries and Aquatic Resource Management Councils (IFARMC) composed of representatives from the LGUs, non-government organizations, private sectors and fisher sectors including the youth and women. The IFARMC basically functions as a recommending body to the legislative council of the municipality or city for integrated fishery development plans and related regulations.

## 5. ICM in the Philippines: framework for application in relation to MPAs

One theme of the two case studies below is that regardless of how MPAs are established, support systems need to be well established and functional at the local level. Thus, a common thread is the importance of being part of the larger ICM system beyond the immediate MPA of concern. This larger ICM system is the local government planning and implementation framework shown in Fig. 6 that has evolved in more than 100 coastal municipalities and cities through the assistance of the CRMP of DENR since 1996.

A system of ICM benchmarks for coordination in planning, monitoring and integrating plans and programs has been proposed for adoption as the national ICM strategy and policy through the DENR and the League of Municipalities of the Philippines. The benchmarks cover the following results by municipal and city governments:

1. coastal resource assessment conducted;
2. multi-year ICM plan adopted;

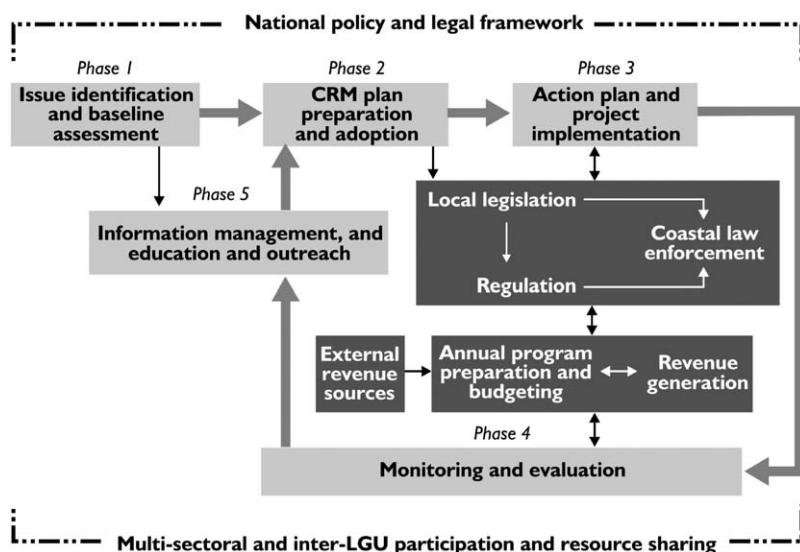


Fig. 6. Five-phase CRM planning process adapted for Philippine local government.

3. ICM resources management organizations established;
4. ICM annual budget allocated;
5. ICM best practices implemented as appropriate, such as but not limited to:
  - a. municipal water boundaries delineated and enforced;
  - b. coastal zoning planned and implemented;
  - c. fisheries management implemented;
  - d. MPAs functional;
  - e. mangrove management implemented;
  - f. solid waste management implemented;
  - g. upland and watershed management started;
  - h. coastal environment friendly enterprises developed;
  - i. legislation passed as required;
  - j. coastal law enforcement effective;
  - k. revenue generation mechanisms being utilized;
  - l. multi-institutional collaboration for ICM utilized.

Municipalities and cities thus serve as the primary unit of government for ICM in the Philippines. As local governments are confronted with multi-faceted problems in their coastal areas, the ICM undertaken by these government units naturally responds to local conditions. The process of establishing MPAs is usually part of a broad community-based resource management program within the local government. This is often facilitated by an outside organization such as a local or national NGO or a local university as in the case of Silliman University and the formation of Apo Island reserve [33]. Being part of a larger ICM program raises awareness about the need for an MPA and also emphasizes the need for broad area plans of which MPAs cover a smaller but more carefully managed area. The broad planning phases of Fig. 6 are broken into stages and activities for MPA establishment in Table 2.

## 6. Case studies of MPAs in the context of ICM

### 6.1. *San Salvador Island MPA, Zambales*

San Salvador Island MPA, Zambales is generally considered a success. The relative improvement in the biophysical condition of the coral reef; other benefits are elaborated in White et al. [27]. The lessons below are indicative of a relatively well-managed LGU and community supported MPA [28]:

1. Supportive and committed leaders are essential at both the level of the fisherfolk organization and the LGU to ensure that an MPA is sustained. In San Salvador, several key persons have remained active and supportive. In the beginning, a proactive mayor provided moral and financial support.
2. User rights need to be enforced to address resource ownership and management as well as guiding the action of resource users. Such user rights, however, need the moral and legal support of the LGU to gain legitimacy and respect by the users.

Table 2

Phases and activities for MPA establishment with LGU jurisdiction [36]

Phases of coastal management <sup>a</sup>	Stages and activities for MPA establishment and management <sup>b</sup>
1. Issue identification and baseline assessment	Recognition of a need and program preparation Integration with the community and assessment of issues  1. Community organization and mobilization 2. Conduct of baseline studies 3. Information, education, and communication
2. Plan preparation and adoption	Definition of goals and objectives: Formation of the core group and development of the management plan  1. Formation of the core group 2. Definition of goals and objectives 3. Preparation of management strategy and action plan 4. Determination of reserve boundaries and zones
3. Action plan and project implementation	Implementation: Formalization of the reserve, implementing management strategies, enforcement, and community strengthening  1. Formalization of the reserve through local ordinance 2. Implementation of strategies for managing the reserve 3. Enforcement 4. Permits and user fees 5. Strengthening of community involvement
4. Monitoring and evaluation	Monitoring and evaluation (biophysical, enforcement, etc.) Refinement of the management plan
5. Information management, education, and outreach	Review of status of MPA and its benefits Refinement of education program from experience Development of outreach program as appropriate

<sup>a</sup>See Fig. 6.<sup>b</sup>These stages and activities are different from those prescribed under the NIPAS Act because of the focus on MPA within local government jurisdiction.

3. Legal support through a municipal ordinance legitimates the rules and regulations of the MPA and specifies exactly what is allowed and disallowed in the area.
4. Capability building is essential to develop skilled and capable leaders and members through various planning and training workshops with community participants.



5. The participation of the community and other stakeholders is the key to the success of the MPA. Stakeholders should have a sense of ownership of the MPA so that they are eager to monitor and protect it from rule violators and know that they are in charge.
6. A clear understanding of objectives brings active participation among stakeholders.
7. There is a need to develop a positive attitude toward rules and collective action among community members and other stakeholders. Rules and collective action should not be seen as hindrances to effective management but as effective vehicles to attain the MPA objectives.
8. The MPA should show tangible outcomes such as an “observable” improvement in fish yield with a reasonable time of 2–3 years. For the participation of the stakeholders to be sustained, they need to feel that their investment—whether in time or financial resources—in resource management shows real results.

A final lesson is that the transaction cost to establish the MPA on San Salvador was high in the beginning requiring that some form of external assistance, either through government financial support or grants from NGOs and donors, was needed [39]. Co-management arrangements are usually “frontloaded” in the sense that a large infusion of financial resources is needed at the beginning stage of a project. With time, maintenance becomes less costly when communities are fully involved and able to take the lead role.

The positive lessons drawn from San Salvador miss a perspective of the surrounding influences of the coastal area in Zambales where increasing pressures are impinging on the MPA. Several factors that are beginning to have a negative influence on the MPA are:

1. Pollution in the bay is increasing from a nearby coal-fired power plant and from increasing numbers of fish cages in shallow areas between the island and mainland.
2. Illegal fishing in surrounding areas has not stopped and in fact has become worse since 1990 and the increasing incidence of violence make the island leaders more apprehensive about their role in marine conservation and protection of the island reef.
3. The bay that includes San Salvador Island was declared under the NIPAS Act as a Protected Seascape. This should provide more protection but contrary to the intent of the NIPAS Act, the requirement to set up a functional Protected Area Management Board (PAMB) has resulted in local political arguments and the alienation of the local government involved from taking an active role in management.

Thus, San Salvador Island Sanctuary is not as sustainable as has been portrayed since 1990. Indeed, it is facing some serious threats that will require broader area management to address through the multiple municipal management body for the Protected Seascape. In fact, it may not survive in its current state much longer.

## 6.2. Bohol Province and Balicasag and Pamilacan Islands

The Island of Bohol lies in the heart of the Central Visayas portion of the Philippines. It has 645 km of coastline with 29 coastal municipalities and one city and a population of 1.2 million [40]. The coastal area is composed of 367 villages (barangays) including 63 islands. There are 80,000 full and part-time fishers in the province; fishing is the second largest employer and main supplier of animal protein.

Similar to other areas in the Philippines, the main CRM issues are declining fish catch, habitat destruction and poor coastal management and law enforcement. Fish catch has declined with catch per unit effort dropping as much as 90% for some sectors of fishing communities. In a survey of over 220 coastal villages of the province in 2001, 55% of villages mentioned the uncontrolled use of dynamite in their villages and a further 48% identified the use of cyanide and pesticides for fishing in their villages [41].

Since devolution of authority for management in the country to the local level, the Bohol Provincial Government has gone a step further and established the Bohol Environmental Management Office (BEMO). Starting off in several pilot sites, the office has spread strategically around the province to cover 95% of coastal LGUs with 29 of 30 coastal LGUs now having at least one MPA established and more are planned.

Bohol has a long history of coral reef management interventions, starting with the marine sanctuaries of Balicasag and Pamilacan Islands in 1985 and 1986, respectively. These were initiated through a community project (MCDP described above) implemented by Silliman University [27,29]. MPAs are the most common ICM tool that is being implemented in Bohol with over 95 legal declarations.

The islands of Pamilacan and Balicasag have both shown that MPAs are an effective tool in ICM and are analyzed here to draw out several lessons in the context of the Bohol Provincial program. Pamilacan Island sanctuary has been well managed by its community and has seen increases in the fish density inside its sanctuary area. Hard coral cover has not changed directly due to the MPA, but historic records and accounts on the island indicate that coral cover has always been low. The Balicasag Island sanctuary has also seen significant increases in biophysical indicators, but management of the sanctuary is relatively poor in comparison to Pamilacan Island (Fig. 7).

Despite following a clear process that was successful in neighboring areas, the Balicasag MPA is not meeting its management objectives. The issue that differentiates Balicasag from other more successful MPAs is the entry of a strong stakeholder into the Balicasag area after the MPA was established. The development of a beach resort managed under the national government unintentionally circumvented the communities' responsibilities for management of the area. Since the island is government owned, residents never had their land tenure clarified. The lack of a local governance system to represent the needs of the island means that the institutional mechanism for management of the MPA is much weaker than in Pamilacan, that has its own village governance system. Yet, because the Balicasag reef is so diverse, the sanctuary has attracted a large influx of divers. This has created

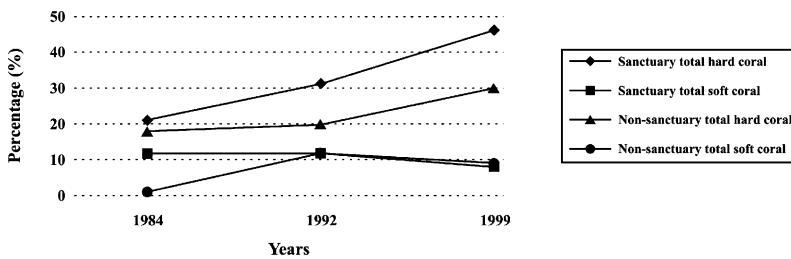


Fig. 7. Coral cover on Balicasag Island reef from 1984 to 1999 [42].

a revenue opportunity while also leaving the community with little input on how the sanctuary is managed in line with their own objectives and need for livelihood.

Lessons being learned from the development of MPAs in Bohol have various implications for broad area ICM in the Philippines. These lessons are:

1. Strong management is not always a guarantee of increasing coral cover and fish abundance within and around a sanctuary. The Pamilacan Island case study indicates this with its strong management, but poor coral recovery compared to Balicasag Island with relatively poor management but good biophysical response.
2. Small MPAs can increase fish catch around a sanctuary, but with growing population (2.85% in Bohol) their positive impacts are diluted as more people rely on the fishery resources as a primary source of animal protein and livelihood [40].
3. The Bohol Province BEMO, assisted by the CRMP of DENR and the Governance and Local Democracy Project of USAID, backed with dynamic political will offers a third layer of support for MPAs and ICM extension for an entire province. This can provide support where other agencies and groups end their responsibilities. It also provides an institutional memory and information and capability building system, which is rarely achieved in a politically driven governance system such as the Philippines.
4. In the case of Balicasag, if the island resort managed by the Philippine Tourism Authority would have shared island management with the local community, some of the MPA tenure issues could have been avoided. The potential revenues from scuba diving on the island, if shared with the community, could form a partnership for management that would benefit both the resort and island community.
5. Bohol now has some 95 legally declared MPAs with nine in one municipality alone. Over 40% of these are well managed through a co-management regime between the community and the local government. These have clear guidelines for sanctuary protection through a strict enforcement system [37].
6. These “well-managed” marine sanctuaries add up to approximately 521 ha of habitat around the province. Given the huge coastal waters in Bohol, this covers

only about 0.01% of the total municipal waters of the province [41]. There is still much to do!

7. Fisheries management and the adoption of a more ecosystem oriented approach to the management of large marine areas is essential to build on the successes in the area; likewise, networks of MPAs and closed access regimes around the sanctuary with clear tenure arrangements are essential. Watershed issues also need to be considered.
8. Tourism offers a huge potential mechanism for creative financing mechanisms for MPAs.

## **7. MPAs in the context of broader coastal management programs**

An emerging trend in the Philippines within local and national governments is to encourage the development of ICM plans and programs through the ICM benchmark system of DENR [13]. These ICM activities can cover the entire coastline of a municipal government or include an entire bay with more than one municipal unit. These plans cover such activities and “best practices” as shoreline land use and development activities, fisheries regulations and management, mangrove management, law enforcement teams, zoning municipal and near-shore waters for various uses and almost always include one or more MPAs. These plans and their implementation are an important advancement towards more holistic ICM than in the past. Within such plans, MPAs are being located in strategic locations to maximize their benefits to the local and downstream sites of concern. A system for evaluating the management effectiveness of MPAs is also being developed that has assisted many MPAs to improve and standardize their management approach [43]. Lessons from these experiences are:

1. MPAs are often the core project within the larger planning area where field implementation begins. Evidence shows that where a basic ICM system is in place and supported by provincial and municipal governments such as in Bohol Province, the level of effectiveness and rate of success of the MPAs is much higher than the national average in the Philippines.
2. Initiation of ICM requires the same participatory processes and community participation as that required of MPAs. Though ICM occurs in a broader coastal and marine area, similar requirements to promote coordination and increase the level of awareness among ICM and MPA institutions are needed.
3. The key role of local governments in ensuring sustainability of ICM and MPAs is significant considering the highly decentralized nature of governance in the Philippines. Adequate authority is given by national laws for local governments to exercise autonomy in implementing ICM programs with technical assistance from national government agencies. Local institutions implementing ICM programs, within which MPAs are situated, can likewise generate funding from major budgetary allocations and from local revenues.

The sustainability of ICM and MPA projects can now be associated with several key features in the planning and implementation cycle that must be in place for successful outcomes. Baseline information is a prerequisite to plan for ICM and to do comparative analyses of ‘with’ and ‘without’ project scenarios for present and future learning. Also, ICM plans that build on good information (environmental profiles and baseline data) that evolves with the planning process are more likely to succeed. Equally, the sustainability of ICM interventions cannot be determined without sufficient time for field-testing whereby participants begin to see results and take responsibility for actions. Supportive of taking responsibility, real and practical results at the field level such as improved income from fish catch, other resource use or alternatives such as tourism are critical in sustaining local momentum. Finally, an integrated planning process is essential to bring together the divergent efforts of the various governmental, non-governmental and other organizations involved in management that is supported by political leadership. Plus, politicians provide resources, legal, and moral support as well as direction for local resource stakeholders that can be the most critical sustaining factor.

## **8. Key lessons from the Philippine experience with MPAs**

### *8.1. Importance of process and participation in planning and establishing MPAs*

The full process to establish an MPA that functions as planned and which endures in time is not simple. Successful examples exhibited different processes but they were all rather long and intense before significant gains were made towards sustainable management of the areas. The participation of major stakeholders in the process is a key factor in success. For San Salvador, this was the fishing community and the local government. For Bohol, the local governments have all initiated ICM programs that are comprehensive and include community organizing and planning to initiate MPAs. Community participation in coastal management is an essential outcome of the Philippine experience in all sites.

### *8.2. Important role of donors, NGOs, academe, and private sector in the Philippine context*

The growth of MPAs in the Philippines is partly explained by the support and interest of the multi-lateral and bilateral donor agencies and development organizations, and the openness of the government to this assistance. Between 1984 and 1994, at least 25 foreign development agencies and eight donor countries supported various community-based CRMPs in the country including the establishment of fish sanctuaries and marine reserves [44]. For example, USAID (through CRMP) and ADB have large CRM initiatives that are helping establish MPAs in priority bays and municipalities to enhance fisheries management and habitat conservation. MPAs are also being initiated by a variety of NGOs as part of a broader effort to conserve coral reefs and manage fisheries. The key lesson is that

without the full endorsement of local communities and governments to take on the long-term responsibility of management, it will not succeed.

### *8.3. MPA system in the Philippines is just beginning to be effective*

An extensive set of MPAs designed with self-sustaining core sanctuary areas (no-take areas) and a surrounding buffer area is one key ingredient to ensure the sustainability and enhancement of the country's coastal resources. Effectively managed fish sanctuaries are the essential component in the improvement of fish yields in Apo, San Salvador and Pamilacan Islands MPAs. Replication of these successful projects in other coastal areas in the country through a system of MPAs with defined no-take areas is helping the country's fisheries and coastal resources recover. In addition, the economic benefits to coastal communities from MPAs include increasing benefits from tourism revenues in well-managed and attractive sites.

While an MPA system in the Philippines is beginning to be effective, more local governments need to adopt MPAs as a strategy for ICM. Although a national alliance of MPA implementers would be useful, it appears that provincial level networks will be more effective and responsive to the needs of MPA practitioners as in Bohol.

### *8.4. Financing MPAs is becoming more creative and local governments are playing a larger role*

Ensuring the financial stability of MPAs when external support (e.g. donor assistance) declines is crucial to their sustainability. Although various forms of MPAs have been established, only a few are maintained after external support ends. A study on transaction cost in San Salvador Island has shown that a community-based co-management arrangement of MPA demands high financial input at the start of the project when community participation is low and needs to be facilitated. However, the transaction cost diminishes when communities and other stakeholders are already involved and some form of organization is functional and respect of rules and regulations is achieved. Ensuring that planning, implementation, and feedback continue by local governments and communities is important but is often in doubt as MPA projects end. This is why local governments must play a key role from the beginning so that they know what to do and how to allocate their budget for assistance to ICM and MPAs.

The most promising sources of funding are tourism revenues from user fees and other mechanisms that make use of the MPA as an enterprise for local community and MPA maintenance. Experiments on how to make conservation pay for itself are currently underway. Eco-tourism is being encouraged in MPAs to generate the necessary funding to support conservation. Creation of livelihoods that support conservation is a mechanism that needs further research. Introducing user fees into the MPA management framework for entry to coral reefs and use of facilities is starting to work. It has been shown that divers in three major diving areas in the Philippines are willing to pay to enter a marine sanctuary or donate for the maintenance of anchor buoys [6,45,46].

LGUs have also developed mechanisms to support their initiatives on MPAs through the allocation of a certain percentage of their internal revenue allotment for resource management activities as mandated by law. Some LGUs are regularly allocating budget from various sources to undertake CRM activities. Although these allocations are usually not large enough to totally support most local MPAs, they are an important first step towards sustainability.

## 9. Conclusion

Combining community participation, environmental education, economic incentives, and legal mandates in a manner appropriate for a particular site together with long-term institutional support from government, non-government groups, academe, or other institutions within an integrated framework offers a good possibility for MPA success in the Philippines. The perspective of viewing MPAs within the context of ICM planning and implementation is bearing fruit as more MPAs are achieving their objectives and appear to be more sustainable as well.

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